The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 38

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KAZUHITO OHASHI

Appeal No. 1998-0634
Application 08/455,667[1]

ON BRIEF

Before URYNOWICZ, BARRETT, and LALL, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

[1] Application for patent filed May 31, 1995, entitled "Interpolation Apparatus For Offset Sampling Signals," which is a continuation of Application 08/257,938, filed June 10, 1994, now abandoned, which is a continuation of Application 08/020,260, filed February 18, 1993, now abandoned, which is a continuation of Application 07/690,655, filed April 24, 1991, now abandoned, which claims the foreign filing priority under 35 U.S.C. § 119 of Japanese Applications 2-114596, 2-114597, and 2-114598, all filed April 26, 1990.

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 11-43. Claims 1-10 have been canceled.

We reverse, but enter new grounds of rejection.

BACKGROUND

The disclosed invention is directed to a method and apparatus for reconstituting pixels that have previously been thinned out by offset sampling employed to reduce the bandwidth of an image signal. The invention teaches that folding distortion (aliasing noise introduced when a signal recorded with a first sampling frequency is reproduced with a second sampling frequency) can be minimized by selecting among several types of interpolation that may be used to reconstitute each pixel to be reconstituted. The selection of the type of interpolation is made by detecting degrees of correlation between a group of pixels adjacent to the pixel to be reconstituted and surrounding groups of pixels.

Claim 11 is reproduced below.

> 11. An image processing apparatus comprising:
>
> input means for inputting an image signal consisting of a plurality of pixels;

forming means for forming a plurality of units, each of the plurality of units consisting of a plurality of pixels;

correlation detecting means for detecting degree of correlation between the plurality of units formed by said forming means; and

interpolating means for interpolating the image signal input by said input means according to the detecting result of said correlation detecting means.

The Examiner relies on the following prior art:

Abe et al. (Abe)	4,833,531	May 23, 1989
Parulski et al. (Parulski)	4,967,264	October 30, 1990
Tai	5,054,100	October 1, 1991 (filed November 16, 1989)

Claims 11-14, 16-20, 22-26, 28-30, 32, 33, and 35-43 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Abe.

Claims 15, 21, 27, and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Abe and Tai.

Claim 31 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Abe and Parulski.

We refer to the Final Rejection (Paper No. 28) and the Examiner's Answer (Paper No. 35) (pages referred to as "EA__") for a statement of the Examiner's position, and to the Appeal Brief (Paper No. 34) (pages referred to as "Br__") and the

Reply Brief (Paper No. 36) (pages referred to as "RBr__") for a statement of Appellant's arguments thereagainst.

OPINION

The claims are grouped to stand or fall together with claim 11 being treated as the representative claim (Br4). The Examiner counters that claim 38 is the broadest independent claim (EA10). Appellant responds that each limitation in claim 11 finds correspondence in claim 38 and provides a table showing the correspondence (RBr2). While we see problems with claim 38, as noted in the new grounds of rejection infra, we agree with Appellant that claim 38 requires, expressly or inferentially, all the limitations of claim 11. For example, claim 11 recites "input means for inputting an image signal consisting of a plurality of pixels," and claim 38 recites "an input image signal comprising said plurality of pixels"; although claim 38 does not expressly recite inputting the image signal with an input means, the phrase "input image signal" implicitly require the image signal to be input somehow. In addition, we agree with Appellant's argument (RBr3) that the key features of claim 11 of detecting the degree of correlation between plural multi-pixel units,

interpolating according to the result of the correlation detection, and forming plural multi-pixel groups are explicitly recited in claim 38 and, therefore, the arguments in support of the patentability of claim 11 are equally applicable to claim 38. We address claim 11 as the representative claim.

"Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention." RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

The Examiner finds (at FR2-3, EA5, and EA12) the "correlation detecting means" to read on the ROM selection circuit 405 shown in figure 55, and the textual disclosure at column 25, lines 6-8, and 29-40, column 24, lines 7-65, and column 22, lines 7-22. Appellant argues (Br9-12; RBr4) that Abe does not disclose "correlation detecting means for detecting degree of correlation between the plurality of units formed by said forming means" and demonstrates that none of the portions of Abe relied upon by the Examiner teach detecting correlation between groups of input pixels.

We have carefully studied Abe, the Examiner's rejection, and Appellant's arguments, and find ourselves in complete agreement with all of Appellant's arguments, not just those dealing with the correlation detecting means. We adopt Appellant's reasons why the Examiner errs as our own. Abe does not disclose detecting the degree of correlation between a plurality of units each consisting of a plurality of pixels. Appellant correctly finds (Br7-8) that Abe selects an interpolation data table stored in one of the ROMs 401-404 in figure 55 based on keyboard input from a human operator or by machine scanning "to check the characteristics" of the original document. Abe does not disclose what "characteristic" is checked and does not disclose that the characteristic is the degree of correlation between a plurality of multi-pixel units. The fact that Abe contains the word "correlation" (e.g., at col. 22, lines 7 and 11) does not teach that the correlation is between a plurality of multi-pixel units. Because Abe does not disclose a "correlation detecting means for detecting degree of correlation," it can not anticipate the further limitation of

"interpolating means for interpolating the image signal . . . according to the result of said correlation detecting means."

It is also noted that latches 11 and 12, in figures 7 and 55, hold two 4-bit (16 tone levels) image data D0 and D1 representing two neighboring pixels (col. 18, lines 29-35), not two units each containing four pixels. Appellant correctly notes (RBr10-11) that the number 4 next to the slash on the IMAGE DATA line into latches 11 and 12 indicates the number of bits in the bus, not the number of samples. Thus, the Examiner errs in finding that Abe teaches "a plurality of units, each . . . consisting of a plurality of pixels," as claimed.

In summary, the Examiner erred in finding that Abe anticipates claim 11. The references to Parulski and Tai, which are applied to the dependent claims, do not cure the deficiencies of Abe with respect to the rejection of the independent claims. The rejections of claims 11-43 are reversed.

NEW GROUND OF REJECTION PURSUANT TO 37 CFR § 1.196(b)

Claims 38-43 are rejected under 35 U.S.C. § 112, first paragraph, as being an improper single means claim(s), or, alternatively, under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which applicant regards as his invention.

Claim 38, although it does not contain the word "means," is interpreted to be in means-plus-function format under 35 U.S.C. § 112, sixth paragraph, because the term "apparatus" does not recite specific structure to perform the two recited functions of "performs comparison" and "interpolates the input image signal." The term "apparatus" is considered similar to a "means" under § 112, sixth paragraph, because it does not recite specific "structure, material, or acts in support thereof." Since there is only one "means" (the "apparatus"), claim 38 is an improper single means claim which is rejected under 35 U.S.C. § 112, first paragraph. See In re Hyatt, 708 F.2d 712, 714, 218 USPQ 195, 197 (Fed. Cir. 1983). Claims 39-43 are rejected because they depend on a rejected independent claim, and because they are also single means claims because they are not directed to a combination.

Alternatively, if claim 38 is not a means-plus-function format claim, it is indefinite under 35 U.S.C. § 112, second paragraph, as functional since there would be no structure to perform the claimed functions. While it permissible to define something by what it does, there must be some structure in the claim that performs the function. Bare statements of function do not distinctly claim the invention.

CONCLUSION

The rejections of claims 11-43 are reversed.

New grounds of rejection have been entered against claims 38-43 pursuant to 37 CFR § 1.196(b).

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b)(amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63, 122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides that, "A new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (§ 1.197(c)) as to the rejected claims:

> (1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .
>
> (2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED - 37 CFR § 1.196(b)

STANLEY M. URYNOWICZ, JR. Administrative Patent Judge	)
LEE E. BARRETT Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
PARSHOTAM S. LALL Administrative Patent Judge	)

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